Serial No. 10/569,781
Atty. Doc. No. 2003P11654WOUS

REMARKS

Claims 39-44 are pending in this application. The specification stands objected-to under 35 USC 112, first paragraph and all pending claims stand rejected under 35 USC 112, first paragraph, because the Examiner finds that it is not clear what kind of mathematical models referred to as "equation 1" are referred to, and that it is not clear how the new and different interactions discussed in the specification are obtained and how they are used in the mathematical models.

As to the objection to the specification, the Applicants note that the invention is enabled by the specification even if there were no discussion of using mathematical models. The invention is summarized and is fully enabled in substitute specification paragraphs 0007 - 00013 and the Figures. The relationships that are discussed as being modeled are derived from empirical data, as described in the specification at paragraph 00010 which says "Two materials at a time are related to each other in an x-y coordinate system on the basis of data gathered from melts already cast." In the prior art, a tolerance band specifying the minimum value and the maximum value for each element pair is specified in the form of straight lines parallel to the respective x or y axis. This range is then narrowed based upon the empirical data gathered from the melts already cast, as described in paragraph 00011 which says "Hence, the range that specifies the permitted proportions of the individual alloying elements and additives must be adjusted to take into account the data gathered on melts already cast, i.e. must be reduced in size." The chemistry of a production melt is checked against the narrowed range to assess its acceptability, and if outside the narrowed range, its chemistry adjusted accordingly or the melt rejected. Thus, the invention is fully enabled in the description of a completely manual method.

Paragraph 00014 then adds the further disclosure that "The method according to the invention can be implemented particularly quickly and in part automatically if the interactions of the alloying elements and/or additive elements are implemented as mathematical models in a computer system." Thus, the use of a mathematical model to implement the invention is elective, but certainly it is not required. The invention can be implemented by taking into account as few as five pairs of elements, as disclosed in the last two sentences of paragraph

00018, which can be done manually quite easily via two-dimensional plots, as illustrated in FIGs. 2-4 of the application. Thus, implementation of the claimed method is fully enabled by the specification and drawings for a manual process, irregardless of any perceived lack of clarity regarding the description of the mathematical models used in certain embodiments.

The mathematical models are adequately described by illustrating the simple x-y single pair example of FIG. 2-4, but as described in paragraph 00045, when considering a large number of pairs having interrelationships that are generally non-linear and complex, it may be useful to utilize methods such as neural networks or fuzzy logic, as is well known in the art.

In response to the Examiner statement that "it is not clear how those new and different interactions are obtained", the answer is by empirical measurement. In response to the Examiner statement that "it is not clear ... how those interactions are used in the mathematic models and equation 1", the answer is that the models/equations are mathematical expressions of the empirically defined interactions, which allows for the data to be expressed more quickly and in part automatically than would otherwise be possible with the manual graphical method described in the specification and illustrated in FIGs. 2-4.

As to the rejection of the claims, it is noted that the claims are fully enabled for the reasons described above with regard to the specification.

Conclusion:

The Applicants believe that the specification and claims are in condition for allowance as currently presented. However, because none of the claims is directed to a mathematical model or to the implementation of a method that requires an equation, the Applicants would be willing to delete all discussions of the optional mathematical model embodiment from the specification, should the Examiner believe that such amendments would facilitate allowance of the application. The Examiner is welcomed to call the undersigned attorney to discuss such changes as appropriate. Such changes are not presented herein without such direction from the Examiner, because the Applicants would prefer the specification as it currently presented for purposes of appeal.

Reconsideration of the application and allowance of claims 39-44 are respectfully requested. The commissioner is hereby authorized to charge any appropriate fee due in connection with this paper, or credit any overpayments to Deposit Account No. 19-2179.

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Respectfully submitted,

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